

Chapter 12 Know Your Wastes and How to Dispose of them Properly

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Definitions

Biohazardous Waste

A. The University of Arizona defines biohazardous waste as animal and human pathogens, infectious animal bedding and feces, animal carcasses and tissue. Laboratory waste including specimens and specimen cultures from medical and pathological laboratories; cultures and stocks of biohazardous materials from research, clinical, and teaching laboratories; wastes from the production of biological agents; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate, and mix cultures or material which may contain any pathogen are considered biohazards.

B. Human blood (including articles contaminated with blood), components of blood or body fluids such as cerebrospinal fluid, synovial fluids, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. All disposable items contaminated with human blood or body fluids are considered biohazards.

C. Any human or primate tissue.

D. Sharps [objects or devices having acute rigid corners, edges or protuberances capable of cutting or piercing - including: glass pipettes (small and large), hypodermic needles, blades, slides and broken glass].

Recombinant DNA Waste

Recombinant DNA of natural or synthetic origin that have been inserted into a host organism must be decontaminated by autoclaving or incineration before disposal. Solid waste such as agar plates may be autoclaved in orange bags and then may be disposed of in the regular trash. Alternatively, solid waste may be placed in red bags in biohazard containers to be removed and incinerated. Liquid waste may be autoclaved or chemically decontaminated if chemical decontamination has been demonstrated to effectively kill the host organism expressing the recombinant materials.

Storage & Containment

General Storage

- Segregate from other waste at point of origin.
- Biohazardous waste must be contained in double red bags.
- Bags must be red and labeled with "Biohazard" or "Infectious waste" and the international biohazard symbol, and certified to meet strength requirements.
- Storage for untreated, bagged biohazardous waste must be secured to deny access to unauthorized personnel.
- Maximum storage time:

7 days or less when stored above the temperature 0° C

OR

90 days or less when stored below 0°C.

Sharps

Needles and syringes shall not be clipped, bent, broken, sheared or recapped prior to disposal.

·Sharps must be disposed of in containers which are leak-proof, rigid, puncture-resistant and "tamper-proof" (made so that they cannot be reopened without great difficulty).

·Sharps containers must be labeled with "Biohazard" or "Infectious Waste," and the international biohazard symbol.

Transportation

Any time biohazardous waste is moved outside the room in which it was generated, the double red-bagged material shall be transported in a closed, rigid secondary container as described below.

Secondary Containers

All red bags and sharps containers must be placed in secondary rigid containers such as pails, cartons, drums, dumpsters or bins for storage.

Secondary containers must be leak-proof and have tight-fitting covers.

·Secondary containers must be labeled on the lid and sides with the words, "Infectious Waste," or with the international biohazard symbol and the word "Biohazard."

·Reusable secondary containers must be easy to clean and must be washed and decontaminated each time they are emptied, unless they have been completely protected from contamination.

Disposal of Biohazardous and Recombinant Waste

Laboratory & Medical Biohazardous Waste

Laboratory and medical biohazardous waste must be disposed of in one of the following methods:

1. Discharge into approved sewer system (liquids and semi-liquids only) after disinfection. NOTE: Halogenated solvents, flammable solvents, phenolic compounds and corrosive materials ($6 < \text{pH} < 9$) may NOT be poured into the sewer.

2. Disposal off-campus at an incinerator. Biohazard waste must be stored in double red bags inside a lidded red biohazard container. Risk Management will pick up red bag waste only when it is properly labeled and the bag is not over-filled.
3. Recognizable human anatomical remains must be cremated or interred. Consult the Human Subjects Committee (626-6721) for further information.
4. Research animals containing infectious agents must be incinerated.

Disposal of Recombinant Waste

1. Discharge into approved sewer system (liquids and semi-liquids only) after disinfection. NOTE: Halogenated solvents, flammable solvents, phenolic compounds and corrosive materials ($6 < \text{pH} < 9$) may NOT be poured into the sewer.
2. Solid waste may either be autoclaved in orange bags and disposed of in regular trash or placed in double red bags in biohazard barrels that are picked up for incineration.

Autoclaving

Autoclaving to render the waste noninfectious is the primary method used at University of Arizona to treat recombinant and some pathogenic waste before disposal. Autoclaved waste shall be disposed of as regular solid waste provided it does not contain any other hazardous properties (e.g., radioactivity). Operating procedures for steam sterilizers must include, but not be limited to, the following:

1. Adoption of standard written operating procedures for each steam sterilizer, including time, temperature, pressure, type of waste, type of container(s), closure on container(s), pattern of loading, water content and maximum load quantity.
2. Check of recording and/or indicating thermometers during each complete cycle to ensure the attainment of a temperature of 121°C (250°F) for one-half hour or longer, depending on quantity and compaction of the load, in order to achieve sterilization of the entire load. Thermometers shall be checked for calibration at least annually.
3. Prepared under standard operating conditions, use of the biological indicator, *Bacillus stearothermophilus* placed at the center of a load at least monthly to confirm the attainment of adequate sterilization condition.
4. Maintenance of records of procedures specified in 1, 2 and 3 above for a period of not less than three years.
5. Maintain a log of the autoclave operation; keeping records of the following for each decontamination load:

Date

Number of bags

Name of operator

Weight of bags

Length of time at maximum temperature

Summary of Requirements

Type of Waste	Bag Color	Container	Label	Decontamination
Agar plates, recombinant materials, plant pathogens.	Orange	Plain plastic barrel until autoclaved, regular trash once material has been autoclaved.	Use autoclave indicator tape or bags that change color upon autoclaving.	Autoclave
Human and animal tissue samples.	Red	Insert a RED biohazard bag inside a red infectious waste barrel and fold the edges over the lip of the container. Place a second red bag inside the first so that biohazardous material waste will be double bagged. (Note: orange bags may not be used for any purpose.)	The red barrel must be labeled as biohazardous waste.	BL3 laboratories must autoclave before RM&S pickup. BL2 laboratories do not need to autoclave -- the materials are sent to an incinerator.
Human and animal blood and sera.	N/A	Liquid biohazards should be stored in durable, leak-proof lidded containers with the decontaminant solution. Human and animal blood and sera free of known pathogens or radioisotopes may be disposed of down the drain with copious amounts of water. Take care not to splash solutions while dumping them down the drain.	The outside of the container must be labeled as biohazardous materials including a biohazard symbol.	Decontaminate the products with bleach at the time they are placed in the container. Deactivated liquid biohazards (NOT chemicals) can be disposed of down the drain with running water.
		All radioactive materials must be placed in yellow	Yellow tape	

Radionuclides	Yellow	bags. Yellow bags must be held in sturdy clear or white plastic lidded containers. Contact Radiation Safety, 626-6850, when your solid waste needs to be picked-up.	with the radiation hazard must be on the outside of the container and the tie of the bag.	N/A
Sharps (needles, blades etc.)	N/A	RM&S provides rigid, puncture-resistant, tamper proof containers for sharps. These containers will be picked-up by Risk Management and Safety.	YES	N/A
Sharps (glass, pipettes etc.)	Clear or orange	RM&S provides rigid, puncture resistant cardboard boxes for glass wastes	The outside of the box must be labeled sharps.	Sharps used for handling biohazardous materials must be autoclaved.
Paper towels	Clear or orange	Paper towels suspected of being contaminated should be disposed of in orange autoclave bags. Paper towels free of contamination should be disposed in regular clear trash bags.	YES	Autoclave if in orange bags.